a compensation ring (20) displaceable axially from the nozzle ring towards the guide vane (5),

~~An exhaust gas turbocharger according to Claim 21,~~ wherein a vane ring is provided, upon which the guide vanes (6) of the guide vane assembly (5) are mounted, wherein the ~~vane ring~~ guide vane (6) is not connected to the nozzle ring (7) and/or the compensation ring (20).

39. (currently amended) An exhaust gas turbocharger according to Claim 21, wherein the moveable guide vanes (6) of the guide vane assembly (5) are mounted ~~one sidedly~~ one-sidedly on the vane ring and essentially contact only the compensation ring (20), however the moveable guide vanes (6) of the guide vane assembly (5) do not contact the nozzle ring (7).

40. (withdrawn) An exhaust gas turbocharger according to Claim 21, wherein besides the radial flow cross-section (13a) also a semi-axial flow cross-section (13b) is provided, wherein the nozzle ring (7) defines the effective cross-section of the radial and the semi-axial flow cross-section (13a, 13b).

REMARKS

Office Action

Turning now to the Office Action in greater detail, the paragraphing of the Examiner is adopted.

Information Disclosure Statement

The Examiner notes that the listing of references of German Patents DE 100 29 640 C2, DE 100 48 105 A1, DE 43 30 487 C1 and DE 196 25 237 C2 in the specification is note a proper information disclosure statement.

The drawings are objected to under 37 CFR 1.83(a)

The Examiner requires new corrected drawings showing every feature of the invention specified in the claims, and particularly the "compensation ring exhibiting a smaller outer diameter and/or a larger inner diameter and/or a smaller weight than the nozzle ring" must be shown or the feature(s) canceled from the claim(s).

In response, Applicants respectfully refer the Examiner to Fig. 1 wherein compensation ring **20** is seated in nozzle ring **7**, and wherein compensation ring **20** exhibits a smaller outer diameter, a larger inner diameter, and a smaller weight than the nozzle ring **7**.

In a conventional turbocharger the housing is made of a low value material such as iron. Such a material would quickly erode in the radial flow channel **13** particularly in the area of radial in-flow cross-section **13a** beside the nozzles **6** where the gasses of highest temperature leave the turbine wheel to enter the turbine housing. A nozzle ring is the ring of high-value material in the turbine housing adjacent the nozzles resistant to oxidation and high temperature fluctuations. Today the nozzle ring need not be a separate material but can be cast or alloyed into the turbine housing or be imparted by surface treating. The area adjacent the nozzles continues to be referred to as the "nozzle ring".

In Fig. 1 the compensation ring **20** exhibits a smaller outer diameter, a larger inner diameter, and a smaller weight than the nozzle ring **7.**

Accordingly, the figure illustrates all features of claim 28.

Specification

The Examiner points that Applicants disclose "Claim 1" (Paragraph 0001 and 0011), however, claim 1 was cancelled by the preliminary Amendment filed on November 18, 2003 and is not an appropriate characterization of the invention.

The Examiner further objects the disclosure to because of the following informalities:

- "DE 100 29 640 2C" should be replaced by --DE 100 29 640 C2--
- Applicant should select only one of the terms to disclose the element "22" through out the specification and claims.

Applicants appreciate the guidance. Applicants have reviewed and revised the specification to conform the original specification, which was a translation of a European format specification, to US format.

Claim Objections

The Examiner objects claims 38 and 39 to because of the following informalities:

- "vane ring (6)" should be replaced by - guide vane (6) - (claim 38)
- In claim 39, grammatical errors should be corrected.

Applicants have reviewed and revised the claims.

Claim Rejections - 35 USC §112

The Examiner rejects claim 28 under 35 U.S.C. §112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

The Examiner points out that the relationship between the compensation ring and the nozzle ring is not clear.

In response, Applicants advise that in a conventional turbocharger the housing is made of a low value material such as iron. Such a material would quickly erode in the radial flow channel **13** particularly in the area of radial in-flow cross-section **13a** beside the nozzles **6** where the gasses of highest temperature leave the turbine wheel to enter the turbine housing. The problem was addressed initially by embedding ring of high-value material in the turbine housing adjacent the nozzles resistant to oxidation and high temperature fluctuations. This was referred to as the nozzle ring. Today the nozzle ring need not be a separate element from the turbine housing, but can be cast or alloyed into the turbine housing or oxidation resistance can be imparted by surface treating (particularly in passenger car applications). The area adjacent the nozzles continues to be referred to in the art as the "nozzle ring".

In the case that the nozzle ring is a separate element from the turbine housing, claim 28 would be most easily visualized.

However, claim 28 is not intended to be limited to only those cases in which the nozzle ring be a separate element from the turbine housing. Thus, claim 28 must be read in view of the

understanding of those working in this art.

In Fig. 1 the compensation ring **20** exhibits a smaller outer diameter, a larger inner diameter, and a smaller weight than the nozzle ring **7.**

Accordingly, it is respectfully submitted that claim 28 is readily understood by those working in this art.

Claim Rejections 35 USC §102

Claims 21-26, 35-37 and 39 are rejected under 35 U.S.C. §102(b) as being anticipated by Dakin et al. (U.S. Patent No. 5,851,104).

Applicants respectfully traverse in view of the amendment of claim 12 to recite that the compensating ring is mounted to the nozzle ring.

Certainly, Dakin et al are concerned with the problem addressed by the present inventors (the problem being set forth at paragraph 6 of the present specification). However, the solution proposed in Dakin et al is to make the entire nozzle assembly moveable axially - a high cost, high inertia (thus slow to respond) solution involving multiple massive moving parts which must be precisely machined and which are accordingly liable to jamming due to soot accumulation and thermal distortion.

In contrast, the present invention provides a comparatively small, low inertia, quick to respond compensation ring in the nozzle ring which is in the turbine housing. In Dakin et al, the nozzle ring is referred to as **fixed circular plate 16** (col 3., line 4). There is no moveable compensation ring in the turbine housing or in the nozzle ring.

As disclosed in Dakin et al at col. 3, lines 29 on, Primary vanes 40 are located about the annular inlet 12. These vanes are positioned between the **fixed circular plate 16** on one side and the clamping ring 22 and adjusting ring 32 on the other.

Thus, in Dakin et al the "adjusting ring" is in the center housing (between the turbine housing and compressor housing, also referred to as bearing housing), and not in the nozzle ring.

At best, Dakin et al discloses at col. 3 line 63 "Annular recesses 41 and 42 are provided on the inner surfaces of the fixed plate 16 and the adjusting ring 32, respectively, to provide appropriate relief for pivotal movement of the primary vanes 40. These features reduce the friction surface area and resisting moment arm of these components in areas where sealing is not needed." **Dakin thus seals the gap on the turbocharger housing side (nozzle ring side) by moving the entire nozzle ring assembly!**

This is precisely the state of the prior art over which the present invention improves!

As discussed in paragraph 8 of the present specification, a problem with the prior art soultion for avoidance or reduction of exhaust flow bypass the entire guide vane ring must be displaced. In particular in commercial vehicles, in which a very high motor brake power is necessary therewith also the motors exhibit a corresponding large size, this flow ring for limiting the radial and semi-axial flow entry cross-section is relatively large. The gap between the variable guide vanes and the flow ring or nozzle ring on the other hand should be as small as possible, ideally in the range of a few tenths to hundredths of millimeters. In practice there exists therewith the problem, of adjusting the

relatively large and therewith also massive flow ring in the axial direction defined to a few tenths or hundredths of millimeters of precision. Such a precise adjustability is not possible in practice, or only with substantial complexity. For this in particular a very complex adjustment ring must be provided, with which the complexity is frequently not justified by the use as a supplemental motor brake device.

Thus, in the prior art a compromise must be made between compensating for a relatively large gap and providing a small as possible gap between guide vanes and nozzle ring. In this case however the employment of an axially displaceable nozzle ring would no longer be justified. In other cases however the nozzle ring as well as the end faces of the guide vanes of the guide arrangement would be subjected to such a substantial frictional wear, that the life of the turbine wheel and therewith the economic feasibility would be significantly reduced. It is however highly desirable to avoid as much as possible reducing the useful life, particularly in the case of turbochargers.

The prior art, and Dakin et al in particular, provide no solution to this problem.

The present invention is based upon the recognition that for the defined adjustment of the gap between guide vanes and nozzle ring it is not necessary to vary the entire nozzle ring, which in particular in the case of motors with large motor capacity are constructed very massively. Rather, it is sufficient when essentially a compensation ring which, in comparison to the nozzle ring, is very much smaller, is axially displaced.

While with the prior art solutions substantial use of force is required to adjust the nozzle ring, the compensation ring

according to the invention is axially adjustable already with relatively small forces.

Dakin et al provide no teaching or suggestion of the present invention, particularly in view of the amendment of claim 21.

Accordingly, withdrawal of the rejection is respectfully requested.

Next, claims 21, 29-30 and 33-34 are rejected under 35 U.S.C. §102(b) as being anticipated by Agahi et al. (U.S. Patent No. 5,564,895).

Applicants respectfully traverse in view of the amendment to claim 21.

Applicants have reviewed the entire teaching of Agahi et al. Agahi et al differs from Dakin et al in the respect that the axially moveable member appears to be provided in the turbine housing rather than the center housing. The nozzles are mounted on a mounting ring which is pivotably adjustable to adjust vane position, and also axially adjustable to prevent "blow by" (col. 2, line 62). However, since the mounting ring is a massive element with the primary job of rotating to thereby precisely adjusting the angular position of the vanes, it is necessarily a heavy, slow reacting element.

To better distinguish the present invention, claim 21 has been amended to clarify that the a flow channel (13) has at least one radial in-flow cross-section (13a) between opposite sides, and that the guide vane assembly is mounted on one side of the flow channel (13) and the compensation ring (20) is mounted on the opposite side of the flow channel (13). This is opposite to

Agahi et al where the complex heavy dual-purpose mechanism is provided on one side of the annular passage.

The advantages of the single purpose compensation ring - light weight, quick response, low actuation forces, etc. - flow from the design wherein compensation mechanism and vane actuation mechanism are independent elements.

Accordingly, withdrawal of the rejection is respectfully requested.

Claim Rejections 35 USC §103

Claims 27 is rejected under 35 U.S.C. 103(a) as being unpatentable over Dakin et al. (U.S. Patent No. 5,851,104).

Applicants respectfully submit that the inherent advantage of the present invention, expressed in claim 27, flows from the mechanism as now more carefully defined in claim 21. Claim 27 is allowable by virtue of being a dependent claim depending from independent claim 21.

Claim 28 is rejected under 35 U.S.C. 103(a) as being unpatentable over Dakin et al. (U.S. Patent No. 5,851,104), in view of design choice.

Claim 28 is allowable by virtue of being a dependent claim depending from independent claim 21.

Accordingly, withdrawal of the rejection is respectfully requested.

Allowable Subject Matter

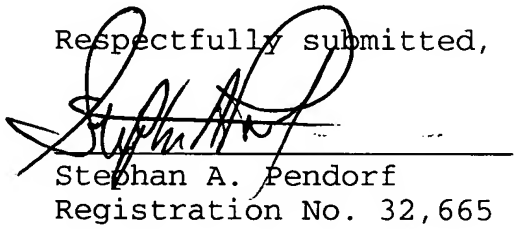
Claim 38 is objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any

intervening claims.

Applicants appreciate this indication and have amended claim 38 to independent form. Indication of allowance is respectfully requested.

As there are no further objections or rejections, early issuance of the Notice of Allowance is respectfully requested. Should the Examiner have any further suggestions, she is invited to contact the undersigned at the telephone number provided below.

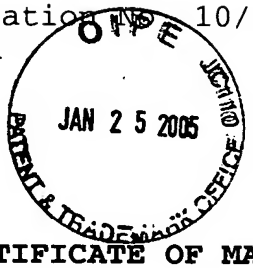
Respectfully submitted,



Stephan A. Pendorf
Registration No. 32,665

PENDORF & CUTLIFF
5111 Memorial Highway
Tampa, Florida 33634-7356
(813) 886-6085

Date: **January 21, 2005**



CERTIFICATE OF MAILING AND AUTHORIZATION TO CHARGE

I hereby certify that the foregoing AMENDMENT A for U.S. Application No. 10/716,279 filed November 18, 2003, was deposited in first class U.S. mail, with sufficient postage, addressed: Attn: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450, on **January 21, 2005.**

The Commissioner is hereby authorized to charge any additional fees, which may be required at any time during the prosecution of this application without specific authorization, or credit any overpayment, to Deposit Account No. 16-0877.

Stephan A. Pendorf